CLINICAL ETHICS

Physicians' intent to comply with the American Medical Association's guidelines on gifts from the pharmaceutical industry

Sharrel L Pinto, Earlene Lipowski, Richard Segal, Carole Kimberlin, James Algina

J Med Ethics 2007;33:313–319. doi: 10.1136/jme.2005.015529

Objective: To identify factors that predict physicians' intent to comply with the American Medical Association's (AMA's) ethical guidelines on gifts from the pharmaceutical industry.

Methods: A survey was designed and mailed in June 2004 to a random sample of 850 physicians in Florida, USA, excluding physicians with inactive licences, incomplete addresses, addresses in other states and pretest participants. Factor analysis extracted six factors: attitude towards following the guidelines, subjective norms (eg, peers, patients, etc), facilitating conditions (eg, knowledge of the guidelines, etc), profession-specific precedents (eg, institution's policies, etc), individual-specific precedents (physicians' own discretion, policies, etc) and intent. Multivariate regression modelling was conducted.

Results: Surveys were received from 213 physicians representing all specialties, with a net response rate of 25.5%. 62% (n = 133) of respondents were aware of the guidelines; 50% (n = 107) had read them. 48% (n = 102) thought that following the guidelines would increase physicians' credibility and professional image; 68% (n = 145) agreed that it was important to do so. Intent to comply was positively associated with attitude, subjective norms, facilitators and sponsorship of continuing medical education (CME) events, while individual-specific precedents had a negative relationship with intent to comply. Predictors of intent ($R^2=0.52$, $p < 0$) were attitude, subjective norms, the interaction term (attitude and subjective norms), sponsorship of CME events and individual-specific precedents.

Conclusions: Physicians are more likely to follow the AMA guidelines if they have positive attitudes towards the guidelines, greater subjective norms, fewer expectations of CME sponsorship and fewer individual-specific precedents. Physicians believing that important individuals or organisations expect them to comply with the guidelines are more likely to express intent, despite having fewer beliefs that positive outcomes would result through compliance.

See end of article for authors' affiliations

Correspondence to:
S L Pinto, University of
Toledo College of Pharmacy,
Mail Stop #609, 2801 W
Bancroft Street, Toledo, OH
43606, USA; sharrel.pinto@
utoledo.edu

Received 11 December 2005
Revised 1 June 2006
Accepted 6 June 2006

Controversy regarding gifts to physicians from the pharmaceutical industry has resurfaced in recent years. Much of this controversy revolves around the question whether the drug companies influence physicians' behaviour and, if they do, whether the results are positive or negative for the quality and cost of healthcare and for the profession of medicine itself.¹ The past 2 years have witnessed extraordinary regulatory foment in the area of conflicts of interest involving physicians, especially conflicts arising in relationships with the pharmaceutical industry.² Studies have found that interactions with pharmaceutical representatives lead to non-rational prescribing³; decreased prescribing of generic drugs⁴; increased awareness, preference and rapid prescribing of new drugs⁵; and increased prescribing cost.⁶

Gift giving is a promotion strategy adopted by the pharmaceutical industry. Gifts range from trinkets, such as pens, to lavish gifts, such as travel subsidies—from materials for patient care to gifts unrelated to the practice of medicine. Of the \$15.7 billion that the pharmaceutical industry spent on promotional activities in 2000, \$13.2 billion went to promotions directed to physicians.⁷ These included free drug samples, detailing by pharmaceutical representatives and journal advertising.⁷ Almost a decade ago, the American Medical Association's (AMA's) House of Delegates adopted the Council on Ethical and Judicial Affairs' guidelines to discourage inappropriate gift-giving practices. The AMA's *Guidelines on gifts to physicians from industry* later appeared in its Code of Medical Ethics (Council on Ethical and Judicial Affairs' Ethical Opinion 8.061).⁸ However, by 2001, anecdotal evidence,^{9–10} published studies^{11–12} and media

reports suggested that physicians and industry representatives were not adhering to these guidelines.

In light of these findings, in August 2001, the AMA launched an 18-month educational initiative to educate physicians, physicians-in-training and sales representatives on these guidelines. The AMA hoped that following these guidelines would help physicians make unbiased prescribing decisions and help create a healthcare system centred on patient care and not driven by the industry. In addition, on 1 July 2002, the Pharmaceutical Research and Manufacturers of America (PhRMA) adopted a voluntary code on the interactions with healthcare professionals. Even more important, physician–industry interactions had become the focus of intense regulatory oversight by federal and state agencies.¹³ By October 2002, the Office of the Inspector General (OIG) published draft compliance guidelines for pharmaceutical manufacturers.¹⁴ This compliance programme, issued in 2003, recommended that the industry carefully examine its relationships with physicians, purchasers and sales force to prevent potential anti-kickback violations. However, an exploratory investigation conducted in March 2003 provided evidence that industry had not curbed their gift-giving practices.¹⁵

Panush¹⁶ states that acceptance of gifts assumes obligations of grateful conduct, grateful use, reciprocity and response.

Abbreviations: AMA, American Medical Association; CME, continuing medical education; OIG, Office of the Inspector General; PhRMA, Pharmaceutical Research and Manufacturers of America; TRA, Theory of Reasoned Action

Social psychologists agree that the prevailing purpose of the gift is to establish the identity of the donor in the mind of the recipient and to oblige the recipient to reciprocate.¹⁷ In addition, physicians have varied attitudes and opinions towards gift giving and gift-giving guidelines, and this in turn affects their intention to follow these guidelines.^{18–27} Success of the AMA–PhRMA initiative and compliance with the OIG guidelines will require physician and industry compliance with the guidelines. Review of the literature found no study that has used a theoretical framework to assess the attitudes of physicians towards following the AMA’s ethical guidelines, or that has looked at factors that predict physicians’ intention to comply with these guidelines. Thus, the goal of our study was to assess physicians’ attitudes towards these guidelines and to identify factors affecting physicians’ intention to comply with the AMA guidelines, following the AMA–PhRMA educational initiative.

METHODS

Social psychology: attitudes and intentions

The Theory of Reasoned Action (TRA) posits that the most important determinant of behaviour is a person’s behavioural intention,^{28–29} and that the direct determinants of behavioural intention are attitudes towards performing the behaviour and subjective norm associated with the behaviour.²⁸ Using the TRA as a theoretical framework, a survey instrument was developed to measure intent to comply with the AMA guidelines. The TRA fails to take into account behaviours that are not under the individual’s control and that could act as facilitators or precedents to performing the behaviour. To counter this limitation, formative research, including one-on-one interviews, was conducted and modifications were made to the theory based on this research. The structure of the interviews was based on Ajzen’s³⁰ paper on *Conceptual and methodological considerations*, and two new constructs, facilitating conditions and preceding factors, were added to the model (fig 1).

Content and face validity of the survey instrument was assessed by a group of experts comprised of four physicians, four PhD faculty and four pharmacy healthcare administration doctoral students. The group of experts reviewed the survey

instrument for item objective match, construct match, sensitivity issues, length of the questionnaire and timing. The survey instrument was pretested on 225 third- and fourth-year medical students at the University of Florida, Florida, USA. The final survey instrument contained 37 questions and 2 scenarios to measure five scales: attitude towards following the guidelines, subjective norms, facilitators, precedents and intent.

Attitude and intention measures

The study had one dependent variable (intent to comply with the AMA guidelines) and five independent variables. The independent variables were physicians’ attitudes towards following the AMA guidelines, subjective norms, sponsorship to continuing medical education (CME) events, facilitators and precedents (table 1). Sponsorship to CME events initially formed part of the attitude scale, but was used in the final analysis as an independent variable. This decision was based on findings from the factor analysis and item analysis.

For attitude towards behaviour and subjective norms, previous studies have used either the summative values for the subdimensions (ie, behavioural beliefs and outcome evaluations) or the multiplicative terms.^{31–34} Our tests indicated that the use of the multiplicative formulation significantly increased prediction of attitudes by 41.5% and subjective norms by 26.7% above and beyond that engendered by the additive contributions.^{35–36} Thus, the multiplicative terms of the subdimensions were used for the final analysis. Facilitators and precedents were calculated by summing the respective items. The dependent variable, behavioural intent, was measured in two ways, directly and indirectly, through the use of scenarios. Physicians were provided with the scenario and asked a question: “You receive a notice from a pharmaceutical representative that their company is offering free registration to the upcoming conference that you are interested in attending. How likely are you to accept?” This scenario was adopted from the AMA’s self-study education resource.³⁷ The second indirect scenario item was the same as above, but was preceded by the AMA guideline. Intent to comply was calculated by summing the scores from the direct measure and the second scenario (indirect measure).

Figure 1 Proposed predictive model for measuring physicians’ intent to comply with American Medical Association’s (AMA’s) ethical guidelines on gifts from the pharmaceutical industry.

Table 1 Study variables and their measurement

Construct: operational definition	Variables	Items	Measurement
Attitude towards following the AMA guidelines: physicians' self-reported behavioural beliefs about the likelihood that the performance of behaviour (following the guidelines) will result in a certain outcome (eg, unbiased prescribing decisions)	Behavioural beliefs	Obligated industry influenced satisfaction CME events	7-point Likert scale
	Outcome evaluation	Physicians' credibility professional image	7-point Likert scale
	Normative beliefs	Patients colleagues sales representatives institution	7-point Likert scale
	Motivation to comply	professional organization residents	7-point Likert scale
Facilitating conditions: conditions or circumstances that facilitate physicians' intention to follow the guidelines	Facilitators	Awareness read knowledge residency policies* educated	7-point Likert scale
	Precedents (profession-specific preceding factors-P1) (individual-specific preceding factors-P2)	Institution policies (P1) professional organization policies (P1) Personal policies (P2) own discretion (P2) practice experience (P2)	7-point Likert scale
Preceding factors: conditions or circumstances that precede physicians' intention to follow the guidelines	Intent to comply with the AMA guidelines: physician's own subjective probability that he/she will intend to follow the AMA guidelines	Direct measure	7-point Likert scale (1 item)
		Indirect measure- scenario 1	7-point Likert scale (1 item)
		Indirect measure- scenario 2	7-point Likert scale (1 item)
	Demographic variables	Specialty area	Open ended
		Year of license	Open ended
		Knowledge of guidelines	7-point Likert scale (1 item)

*Items that were deleted from the final analysis.

Data collection

A database containing the names of all licensed physicians in the state of Florida was obtained from the Department of Health. On the basis of a power analysis and estimates from similar studies, the survey was mailed to 850 physicians.³⁸⁻⁴² Respondents included primary care physicians with active licences in the state of Florida. Physicians with inactive licences, incomplete addresses, addresses in other states and pretest participants were excluded. Data were collected over a 6-week period beginning from 1 June 2004.

Physicians received an envelope containing a cover letter, the survey instrument and a stamped return envelope. The cover letter described the purpose of the study and indicated that a return of the survey instrument would imply consent for participation. Fifteen days after the initial mailing of the surveys, a reminder packet was sent to all subjects in the study. The aim of the follow-up cover letter was to stress the importance and timely nature of the study, to request an immediate return of the survey, and to thank physicians if the survey was returned. In an effort to bolster the response rate, 219 email addresses were extracted from the practitioner profiling system on the Florida Department of Health's website. At the end of 4 weeks, a final email reminder was sent to physicians along with a note of thanks for responding.

SPSS V.10 was used to analyse the data. Responses containing >25% of missing responses were deemed invalid for the final analysis. The survey was tested for construct validity by conducting an exploratory factor analysis using the principal axis factoring method and an oblique (Promax) rotation. Factor loadings > ±0.4 were desired.⁴³⁻⁴⁴ The survey instrument was tested for reliability using Cronbach's α and an item analysis was conducted to test for response variability, response location and item discrimination.

Pearson's correlation (r) tests were carried out. Interpretations for the correlation coefficients were made based on Cohen's definition of effect sizes.⁴⁵ Multiple regression analyses were conducted to determine the extent to which the independent variables predict the dependent variable. The last (forced entry) method entered was used.

RESULTS

Results of the factor analysis indicated that 65% of the total variance in the items was explained by six extracted factors.

The factors identified were; attitudes towards following the guidelines (Cronbach's $\alpha = 0.875$), subjective norms (Cronbach's $\alpha = 0.899$), facilitators (Cronbach's $\alpha = 0.838$), profession-specific precedents (Cronbach's $\alpha = 0.796$), individual-specific precedents (Cronbach's $\alpha = 0.848$) and intent to comply with the guidelines (Cronbach's $\alpha = 0.793$; table 2).

On the basis of the findings from the factor analysis, reliability and item analysis, the residency-training item from the facilitator scale was dropped from the final analysis. The CME sponsorship items were dropped from the attitude scale and were used as the sixth independent variable in the analysis.

At the end of the study, a total of 213 (25.5%) physicians responded. On the basis of the AMA's classification of specialties, there was at least one respondent from each category. Most physicians (175 (82%)) in this study had been practising for ≥ 25 years.

In all, 62% ($n = 133$) of the physicians in the study were aware of the guidelines, while only 50% ($n = 107$) had read them, indicating that AMA was partially successful in their cause. For the most part, physicians thought that it was important to increase their credibility as a profession and improve their professional image. Many believed that following the guidelines would most likely assist them in this cause. Although about 48% ($n = 102$) thought that following the AMA guidelines would increase physicians' credibility and professional image, 68% ($n = 145$) agreed that it was important to do so. Physicians were almost equally divided when asked whether following the AMA guidelines would decrease industry-influenced prescribing decisions; however, 66% ($n = 141$) said it was important to do so. Almost half the physicians (102 (48%)) in the study stated that it was likely that following the guidelines would decrease the possibility of obligation to the industry, and 62% ($n = 132$) stated that decreasing the possibility of obligation was important to them.

Intent to comply with the guidelines was positively associated with attitude towards the guidelines, subjective norms, sponsorship to CME events and facilitators, while individual-specific precedents had a negative relationship with intent (table 3).

On the basis of our multiple regression analysis, we found that attitude towards following the guidelines, subjective norms, sponsorship to CME events, individual-specific precedents and the interaction between attitude and subjective norms jointly predict physicians' intent to comply with the

Table 2 Principal axis factor analysis results for the survey items

Construct	Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Attitude	Obligated	0.859					
	Industry influenced	0.838					
	Satisfaction	0.883					
	CME events				0.368		
	Physicians' credibility	0.908					
	Professional image	0.898					
Subjective norms	Patients		0.794				
	Colleagues		0.895				
	Sales representatives		0.424				
	Institution		0.810				
	Professional organisation		0.852				
	Residents		0.863				
Facilitators	Awareness			0.780			
	Read			0.903			
	Knowledge			0.908			
	Residency policies			0.282			
	Educated			0.724			
Profession-specific precedents	Institution policies						0.813
	Professional organisation policies						0.800
Individual-specific precedents	Personal policies				0.811		
	Own discretion				0.863		
	Practice experience				0.772		
Intent to comply with the guidelines	Direct measure					0.529	
	Scenario 1					0.856	
	Scenario 2					0.884	

AMA guidelines ($R^2 = 0.52$, $F = 27.153$, $p = 0$). Table 4 presents the results from the multivariate analysis using the general linear model procedures. The interaction term between attitudes and subjective norms was significant, indicating that individual physicians' attitudes towards the guidelines vary as a function of their subjective norms, in terms of their intent to comply with the guidelines ($\beta = -0.607$, $t = -3.89$, $p = 0$). Thus, the impact of subjective norms on physicians' intent to comply with the guidelines will be greater for physicians with fewer positive attitudes towards following the guidelines versus physicians with greater positive attitudes. Facilitators and profession-specific precedents did not significantly predict intent controlling for the other factors.

Further analyses were conducted to look at non-response bias. Independent sample t tests were used to compare the means for the group of physicians who responded to the first phase of mailing versus those who responded to the second phase of mailing. There were no significant differences between the two groups ($t = 0.071$, $p < 0.943$).

DISCUSSION

The goal of this study was to assess physicians' attitudes and to identify factors that predict physicians' intent to comply with

the AMA's ethical guidelines on gifts to physicians. The study used a theoretical framework from social psychology to assess and understand better the attitudes of physicians towards following the AMA's ethical guidelines, post-2001 AMA-PhRMA initiative. In addition, this study identified factors that influenced physicians' intent to comply with these ethical guidelines.

Physicians in this study rated their credibility and professional image as being the most important aspects of following the AMA guidelines. For the most part, physicians thought that it was important for them to increase their credibility as a profession and also to improve their professional image. These findings are critical as the aim of the 2001 AMA-PhRMA initiative was to increase professionalism and help physicians deal with gifts which affect their credibility.

Physicians were asked whether following the AMA guidelines would decrease the possibility of feeling obligated to the pharmaceutical industry. Almost half said that following the guidelines was likely to decrease the possibility of feeling obligated to the pharmaceutical industry, and 62% ($n = 132$) stated that decreasing the possibility of obligation was important to them. This finding was important since the purpose of the AMA initiative was to help physicians deal with

Table 3 Pearson's correlation coefficients among the variables ($n = 213$)

Variables	A	SN	CME	FC	P1	P2
A	—					
SN	0.559*	—				
CME	0.258	0.009	—			
FC	0.167*	0.178*	-0.015	—		
P1	-0.080	0.019	-0.121	-0.038	—	
P2	-0.411*	-0.484*	-0.076	-0.181*	0.310*	—
Intention	0.582*	0.503*	0.287*	0.161*	-0.056	-0.435*

A, attitude; CME, continuing medical education; FC, Facilitators; P1, Profession-specific precedents; P2, Individual-specific precedents; SN, Subjective norms.

*All correlations are statistically significant at $p \leq 0.05$.

Table 4 Multivariate analysis of prediction of intention (n=213)

Independent variables	b†	Std error	β‡	t Value	p Value	Model F	Model R ²
A*	0.046	0.007	0.916	6.484	0		
SN*	0.026	0.005	0.460	4.905	0		
CME*	0.063	0.024	0.255	2.573	0.011		
Individual-specific precedents*	-0.095	0.040	-0.147	-2.394	0.018	27.153	0.516
A × SN*	-0.000	0.000	-0.607	-3.890	0		
A × CME*	0.000	0.000	-0.231	-1.828	0.069		
Facilitators	0.027	0.025	0.057	1.107	0.27		
Profession-specific precedents	0.069	0.054	0.068	1.293	0.197		

A, attitude; CME, continuing medical education; SN, Subjective norms.

*All correlations are significant at $p \leq 0.05$.†Unstandardised β .‡Standardised β .

industry gifts which could seem to affect the judgement of individual practising physicians.

Self-serving bias is unintentional, unconscious and affects choices indirectly by changing the way individuals seek out and weigh information on which they later base their choices when they have a stake in the outcomes.¹⁷ Interestingly, 54% (n = 115) of physicians said that following the AMA guidelines would give them the satisfaction in knowing that they were compliant with the guidelines. Since more than half of the physicians stated that their satisfaction in following the guidelines was important to them, it might be useful to use this reasoning to promote the ethical guidelines.

Although the pharmaceutical industry defends the value of its educational sponsorship, studies about CME events have found them biased in favour of sponsors' drugs.²⁴ Studies show that sponsorship of conferences leads to biased prescribing in favour of the sponsoring company's drugs, and increased prescribing of sponsoring companies' products.^{23, 46} CME events have become an unfounded political mandate, with no scientific evidence that these actually improve care, decrease malpractice claims or reduce patient risk. Critics state that they increase the costs for physicians and their employers.⁴⁷ Some physicians from our study were upset about the lack of CME sponsorship, although more than half said that being sponsored for CME events was unimportant to them. Our study found only 39% (n = 83) of physicians said that being sponsored to attend CME events was important to them; almost 50% (n = 105) said that it was unimportant. This finding is similar to a study conducted by Verispan (Yardley, Pennsylvania, USA), a marketing research company. Their study reported that a significant number of physicians were upset due to lack of CME sponsorship as a result of the AMA guidelines.²⁵ Physicians believed that their families should be able to accompany them to resorts where drug companies sponsored their medical education sessions. As almost one-half of physicians in the present study thought that receiving sponsorship was unimportant to them, it is likely that they might decline gratuities from the industry for CME events. This finding could be a potential aftermath of the AMA educational initiative, whereby an increased number of physicians now view the CME sponsorship as problematic or, in other words, as something that can be misconstrued as affecting their practice or prescribing decisions.

Physicians identified their professional organisation and their colleagues as the most important referents, whereas sales representatives were the least important at motivating them to follow the guidelines. Referring to the voluntary code adopted by the pharmaceutical industry, Dr Sara Walker⁴⁸ stated that peer pressure might be the best incentive for putting the code into practice. Thus, the study findings indicate that, among physicians also, peer pressure is the best incentive for adherence with the guidelines. The finding with respect to

professional organisations is consistent with the move of professional associations and standard-setting bodies towards more distance in industry relationships by encouraging the practice of following ethical guidelines.²⁴

Although a number of studies indicate that physicians depend on sales representatives for information, the findings from this study indicate that, with regard to ethical guidelines, physicians see sales representatives in a different light. The findings imply that physicians perceive sales representatives as not wanting them (physicians) to comply with the guidelines. Physicians might think that sales representatives want them to accept their promotional endeavours so as to create the feeling of obligation and return the favour in terms of increased drug sales. Despite the AMA-PhRMA educational initiative, the 2001–3 IMS reports indicate that the numbers for marketing to physicians are only increasing from those in previous years.⁴⁹ This too might have led physicians to believe that representatives were not following the ethical guidelines and thus would not want them (physicians) to follow the guidelines either.

In all 50% (n = 107) of the physicians in the study had read the guidelines, but only 28% (n = 60) of the physicians agreed that they could follow the guidelines because they knew the guidelines very well. As stated by a physician in the one-on-one interviews, physicians are busy professionals. A potential method to assist physicians in reading the guidelines could be by providing these guidelines for some form of continuing education credit or through education at a professional or a national meeting. It is possible that physicians might have read the guidelines, but not being educated to use them in specific situations might have led to their belief of not knowing the guidelines very well. Another potential explanation for this response was identified in the one-on-one interviews. Physicians might view it as the pharmaceutical industry's responsibility to adhere to these guidelines and change their (industry's) behaviour accordingly. This attitude might have prevented physicians from familiarising themselves with the AMA guidelines. If propagation of the guidelines through professional and national organisations is not successful in getting physicians to follow the guidelines, it might be time to call for a mandatory approach on compliance, as a last resort. On 1 July 2005, California became the first state to adopt a mandatory approach to compliance programmes for the pharmaceutical industry.⁵⁰ If physicians in Florida do not view compliance as their responsibility, Florida might need to consider an approach similar to California.

More than half of the study physicians stated that they would follow their own policies over the AMA guidelines. Findings for individual-specific precedents support the theory that "self-regulation is often more effectively used and adopted than applied standards".⁴⁸ It is important to note that, although these physicians might not want to follow the AMA guidelines,

it is possible that their own policies might still be ethical in nature and might conform to ethical standards.

In all, 66% of the physicians said that they were likely to follow the AMA guidelines. However, when presented with the scenario, half (49.7%) of the physicians went against the AMA guideline. When physicians were provided with the AMA guideline and asked again about their likelihood to accept the offer, this number dropped to 42% ($n = 60$). This indicates that there were some physicians who changed their prior decision when presented with the guideline. This finding further corroborates the fact that physicians who want to follow the guidelines do not often see through the industry tactics and might be unable to apply the guidelines. For future promotion of the guidelines, it might be helpful to present physicians with scenarios from practice settings, along with the guidelines. Although AMA states that over 700 000 physicians were made aware of the guidelines, it is possible that physicians might not have received the booklet containing the guidelines from AMA, or it might have been misplaced or categorised as junk mail. A timely redistribution of the booklet, coupled with excerpts from the self-study module, might be a good alternative.

The results showed that four of the six independent variables explained a significant proportion of the variance in intent to comply with the AMA guidelines. This finding is congruent with prior research done using the theory of reasoned action in explaining intent and behaviour.^{31 32 51–53} The interaction between attitude and subjective norms suggests that if a physician believed that few positive outcomes would result from following the guidelines but was convinced that his colleagues want him to follow the guidelines, it is likely that he would do what his colleagues want him to do irrespective of his attitude towards the guidelines. The implication of this finding is of great importance, since it sheds light on the fact that attitudes and subjective norms work together in influencing physicians' intent to comply with the ethical guidelines. Bearing this in mind, it would be easy for policy makers to switch their focus from trying to change physicians' attitudes to trying to concentrate on the opinions of important referents such as physicians' professional organisation, colleagues and patients. It is important to note that, in formulation of further initiatives, none of these factors should be discounted.

Comments offered by survey respondents expressed that they were upset about not being sponsored for CME events and were especially displeased about their spouses not being able to accompany them. Since sponsorship to CME events was a significant predictor of intent, providing physicians with some form of gratuity might relieve their disdain towards the guidelines. An alternate method to persuade physicians who are upset as a result of lack of CME sponsorship might be through offering CME events that are online and that do not require physicians to spend their own money for travel and lodging. A number of physicians claimed that CME events do not affect their prescribing habit. Yet, studies indicate otherwise.^{23 34} The OIG cited sponsorship or other financing related to third-party educational conferences and meetings as kick-backs.¹⁴ If a bill in connection with this ruling is passed or a mandatory law applied, despite their views about the CME sponsorships under the AMA's ethical guidelines, physicians might not have any choice other than refusing CME sponsorships provided by the industry.

Limitations

One of the limitations of this study is generalisation, as it used physicians from only one state. Physicians in another state—for example, Vermont—which passed a bill against industry gifts, might respond differently. Additionally, the study used a mailed survey, and the limitations that accompany such use

apply to this study. Precautions were taken by stressing the importance of anonymity and confidentiality of responses. The issue of socially desirable responses was addressed through the use of the scenarios and by assuring the physicians of no identifiers. The first scenario item was placed on page one, while the second scenario was placed on the last page so as to partially blind the respondents from viewing their first response. Finally, participation bias cannot be discounted from this study. Physicians who had strong negative attitudes towards the guidelines might have refused to participate in the study. This could have skewed the results of the study. Although this study had a few limitations, it provides potential explanations to the previous failures of these guidelines and identifies key factors for the effective propagation of these guidelines.

CONCLUSION

This study found that physicians with greater positive attitudes towards following the guidelines, greater subjective norms, fewer expectations of CME sponsorship and fewer individual-specific precedents are more likely to comply with AMA's ethical guidelines. Physicians who refuse to comply on the basis of their belief that few positive outcomes will result through following the guidelines will change their intention if they perceive that their professional organisation or their peers want them to follow the guidelines. Physicians who do not view CME sponsorship as important will be more likely to follow the ethical guidelines.

AMA has succeeded in its mission to increase professionalism and help physicians deal with gifts that impact physicians' credibility. For physicians' compliance with ethical guidelines, the real effort should focus on changing physicians' attitudes towards following these guidelines and increasing the impact of motivational referents. Since most physicians favour their own professional (specialty) organisations over the AMA, professional organisations have a better chance at compliance with ethical guidelines. Additionally, for physicians who are not sold on the guideline associated with CME sponsorship, AMA might need to concentrate on working with The Accreditation Council for Continuing Medical Education, physicians and the pharmaceutical industry towards a compromise.

Authors' affiliations

Sharrel L Pinto, Pharmacy Health Care Administration, University of Toledo, Toledo, Ohio, USA

Earlene Lipowski, Richard Segal, Carole Kimberlin, Pharmacy Health Care Administration, University of Florida, Gainesville, Florida, USA

James Algina, College of Education, University of Florida, Gainesville, Florida, USA

Funding: This study was funded in part by the University of Florida Perry A Foote small grants program: \$2000.

Competing interests: None.

Ethical approval: This study was approved by the Institutional Review Board at the University of Florida on June, 2004.

REFERENCES

- 1 Blumenthal D. Doctors and drug companies. *N Engl J Med* 2004;**351**:1885–90.
- 2 Studdert DM, Mello MM, Brennan TA. Financial conflicts of interest in physicians' relationships with the pharmaceutical industry—self-regulation in the shadow of federal prosecution. *N Engl J Med* 2004;**351**:1891–900.
- 3 Haayer F. Rational prescribing and sources of information. *Soc Sci Med* 1982;**16**:2017–23.
- 4 Bower AD, Burkett GL. Family physicians and generic drugs. *J Family Pract* 1987;**24**:612–16.
- 5 Peay MY, Peay ER. The role of commercial sources in the adoption of a new drug. *Soc Sci Med* 1988;**26**:1183–9.
- 6 Caudill TS, Johnson MS, Rich EC, et al. Physicians, pharmaceutical sales representatives and the cost of prescribing. *Arch Fam Med* 1996;**5**:201–6.

- 7 **National Institute for Health Care Management.** *Prescription drugs mass media advertising*, www.nihcm.org/pharm.html (accessed 7 Feb 2007).
- 8 **American Medical Association.** *Ethical opinions/guidelines—opinions E-8.061, "Gifts to physicians from industry"*, www.ama-assn.org/ama/pub/category/4001.html (accessed 7 Feb 2007).
- 9 **Sagall RJ.** Drug companies, dollars, and doctors. *Pediatr Parents* 1992;**1**:8.
- 10 **Page L.** Reactions to AMA gift code show rumblings in the ranks. *Am Med News* 1992;**35**:2.
- 11 **Gibbons RV, Landry FJ, Blouch DL, et al.** A comparison of physicians' and patients' attitudes toward pharmaceutical industry gifts. *J Gen Intern Med* 1998;**13**:151–4.
- 12 **Steinman MA, Shilipak MG, McPhee SJ.** Of principles and pens: attitudes and practices of medicine housestaff toward pharmaceutical industry promotion. *Am J Med* 2001;**110**:551–7.
- 13 **Chimonas S, Rothman DJ.** New federal guidelines for physician-pharmaceutical industry relations: the politics of policy formation. *Health Affairs* 2005;**24**:949–60.
- 14 **Petty S.** OIG cautions drug industry on relations with physicians. *Caring for the Ages* 2002:1.
- 15 **Pinto SL, Lipowski E, Segal R, et al.** *American Medical Association's guidelines on gifts to physicians: assessing intent to comply* [dissertation]. Gainesville: University of Florida, 2004.
- 16 **Panush RS.** Not for sale, not even for rent: just say no. Thoughts about the American College of Rheumatology adopting a code of ethics. *J Rheumatol* 2002;**29**:1049–57.
- 17 **Dana J, Loewenstein G.** A social science perspective on gifts to physicians from industry. *J Am Med Assoc* 2003;**290**:252–5.
- 18 **Coyle SL.** Physician-industry relations: Part 1: Individual physicians. *Ann Intern Med* 2002;**136**:396–402.
- 19 **Brubaker B.** *Drug firms still lavish pricey gifts on doctors*, www.washingtonpost.com (accessed 7 Feb 2007).
- 20 **Corpus TJ.** Gifts to physicians from industry. *JAMA* 1991;**265**:501.
- 21 **Goldstein AO, LeBlond RF, Leung AK, et al.** Gifts to physicians from industry. *JAMA*. 1991;**266**: 61, 63).
- 22 **Howard SM.** Gifts to physicians from the pharmaceutical industry. *JAMA* 2000;**283**:2655–8.
- 23 **Komesaroff PA, Kerridge IH.** Ethical issues concerning the relationships between medical practitioners and the pharmaceutical industry. *MJA* 2002;**176**:118–21.
- 24 **Ray M.** Who pays for the pizza? Redefining the relationship between doctors and drug companies. 1: Entanglement, *BMJ* 2003;**326**:1189–92.
- 25 **Shockman L.** 'Drug companies' 'freebies' make Doctor Ross sick, lavish handouts are raising real ethical issues, critics say. *The Blade* 2003;**A3**.
- 26 **Sweeney P.** *Drug company gifts: a response*, www.brown.edu/Administration/George_Street_Journal/vol27 (accessed 7 Feb 2007).
- 27 **Wazana A.** Gifts to physicians from the pharmaceutical industry. *JAMA* 2000;**283**:2655–8.
- 28 **Glanz K, Lewis FM, Rimer BK, eds.** *Health behavior and health education*. 2nd edn. San Francisco, CA: Jossey-Bass Publishers, 1996.
- 29 **Montano DE, K D, Taplin SH.** The theory of reasoned action and the theory of planned behavior. In: Glanz K, Lewis FM, Rimer BK, eds. *Health behavior and health education*. San Francisco, CA: Jossey-Bass Publishers, 1996:85–112.
- 30 **Ajzen I.** *Constructing a TpB questionnaire: conceptual and methodological considerations*, <http://www.people.umass.edu/ajzen/pdf/tpb.measurement.pdf> (accessed 7 Feb 2007).
- 31 **Conner M, Kirk SF, Cade JE, et al.** Environmental influences: factors influencing a woman's decision to use dietary supplements. *Am Soc Nutr Sci* 2003;**133**:1978S–82S.
- 32 **Tolma EL, Reininger BM, Ureda J, et al.** Cognitive motivations associated with screening mammography in Cyprus. *Prev Med* 2003;**36**:363–73.
- 33 **Baranowski T, Cullen KW, Nicklas T, et al.** Are current health behavior change models helpful in guiding prevention of weight gain efforts. *Obesity Res* 2003;**11**:235–43S.
- 34 **Liabsuetrakul T, Chongsuvivatwong V, Lumbiganon P, et al.** Obstetricians' attitudes, subjective norms, perceived controls, and intentions on antibiotic prophylaxis in caesarean section. *Soc Sci Med* 2003;**57**:1665–74.
- 35 **Evans MG.** The problem of analyzing multiplicative composites: interactions revisited. *Am Psychol* 1991;**46**:6–15.
- 36 **Doll J, Orth B.** The Fishbein and Ajzen theory of reasoned action applied to contraceptive behavior: model variants and meaningfulness. *J Appl Soc Psychol* 1993;**23**:395–415.
- 37 **American Medical Association.** *Gifts to physicians—online self-study materials*, <http://www.ama-assn.org/ama/pub/category/8943.html> (accessed 7 Feb 2007).
- 38 **McCormick BB, Tomlinson G, Brill-Edwards P, et al.** Effect of restricting contact between pharmaceutical company representatives and internal medicine residents on posttraining attitudes and behavior. *JAMA* 2001;**286**:1994–9.
- 39 **Hoffman L, Enders JL, Luo J, et al.** Impact of an antidepressant management program on medication adherence. *Am J Manag Care* 2003;**9**:70–80.
- 40 **Fowler FJ, ed.** *Survey research methods*. 2nd edn. Newbury Park, CA: Sage Publications, 1993.
- 41 **Bower AD, Burkett GL.** Family physicians and generic drugs. *J Fam Pract* 1987;**24**:612–16.
- 42 **Yaldo AZ.** *Effects of patient persuasion on physician prescribing of antibiotics* [dissertation]. Gainesville: University of Florida, 2002.
- 43 **Spector PE.** Quantitative applications in the social sciences. In: Lewis-Beck MS, eds. *Summated rating scale construction: an introduction*. Newbury Park, CA: Sage Publications, 1992.
- 44 **Hair JF, Anderson RE, Tatham RL, et al.** *Multivariate data analysis*. Upper Saddle River, NJ: Prentice-Hall, 1998.
- 45 **Stevens J.** *Applied multivariate statistics for the social sciences*, 4th edn. Mahwah, NJ: Lawrence Erlbaum Associates, 2002.
- 46 **Bowman MA, Pearle DL.** Changes in prescribing patterns related to commercial company funding of continuing medical education. *J Continuing Edu Health Professions* 1988;**8**:13–20.
- 47 **Edwards DA.** Gifts to physicians from the pharmaceutical industry. *J Am Med Assoc* 2000;**283**:2656–8.
- 48 **Mahoney D.** PhRMA code: no more trips to the ball game. *Intern Med News* 2003;**35**.
- 49 **IMS Health.** *Total U.S. promotional spend by type in 2003*. Promotional data: IMS Health, Integrated Promotional Services™ and CMR, 6/2004.
- 50 **Ung D.** California mandates comprehensive compliance programs for pharmaceutical companies. *Drug Benefit Trends* 2005;**17**:242–3.
- 51 **Araujo MT, Paiva T, Jesuino JC, et al.** General practitioners and neurotelemedicine. *Stud Health Technol Inform* 2000;**78**:45–67.
- 52 **Werner P, Mendelsson G.** Nursing staff members' intentions to use physical restraints with older people: testing the theory of reasoned action. *J Adv Nurs* 2001;**35**:784–91.
- 53 **Levin PF.** Test of the Fishbein and Ajzen models as predictors of health care workers' glove use. *Res Nurs Health* 1999;**22**:295–307.
- 54 **Chren MM, Landefeld CS.** Physicians' behavior and their interactions with drug companies: a controlled study of physicians who requested addition to a hospital formulary. *J Am Med Assoc* 1994;**271**:684–6.